SEQUENCE LISTING

<110> Selden, Richard F.
Miller, Allan M.
Treco, Douglas A.

<120> OPTIMIZED MESSENGER RNA

<130> 10278-009001

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<141> 1999-09-28

<150> US 60/130,241
<151> 1999-04-20

<150> 60/102,239
<151> 1998-09-29

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gcc gtg gag ctg agc tgg gac tac atg cag agc gac ctg ggc gag ctg      147
Ala Val Glu Leu Ser Trp Asp Tyr Met Gln Ser Asp Leu Gly Glu Leu
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ccc gtg gac gcc cgc ttc ccc ccc cgc gtg ccc aag agc ttc ccc ttc      195
Pro Val Asp Ala Arg Phe Pro Pro Arg Val Pro Lys Ser Phe Pro Phe
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Asn Thr Ser Val Val Tyr Lys Lys Thr Leu Phe Val Glu Phe Thr Asp
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ggc ccc acc atc cag gcc gag gtg tac gac acc gtg gtg atc acc ctg      339
Gly Pro Thr Ile Gln Ala Glu Val Tyr Asp Thr Val Val Ile Thr Leu
            95                 100                 105

aag aac atg gcc agc cac ccc gtg agc ctg cac gcc gtg ggc gtg agc      387
Lys Asn Met Ala Ser His Pro Val Ser Leu His Ala Val Gly Val Ser
        110                 115                 120

tac tgg aag gcc agc gag ggc gcc gag tac gac gac cag acc agc cag      435
Tyr Trp Lys Ala Ser Glu Gly Ala Glu Tyr Asp Asp Gln Thr Ser Gln
    125                 130                 135

cgc gag aag gag gac gac aag gtg ttc ccc ggc ggc agc cac acc tac      483
Arg Glu Lys Glu Asp Asp Lys Val Phe Pro Gly Gly Ser His Thr Tyr
140                 145                 150                 155

gtg tgg cag gtg ctg aag gag aac ggc ccc atg gcc agc gac ccc ctg      531
Val Trp Gln Val Leu Lys Glu Asn Gly Pro Met Ala Ser Asp Pro Leu
                160                 165                 170

tgc ctg acc tac agc tac ctg agc cac gtg gac ctg gtg aag gac ctg      579
Cys Leu Thr Tyr Ser Tyr Leu Ser His Val Asp Leu Val Lys Asp Leu
            175                 180                 185

aac agc ggc ctg atc ggc gcc ctg ctg gtg tgc cgc gag ggc agc ctg      627
Asn Ser Gly Leu Ile Gly Ala Leu Leu Val Cys Arg Glu Gly Ser Leu
        190                 195                 200

gcc aag gag aag acc cag acc ctg cac aag ttc atc ctg ctg ttc gcc      675
Ala Lys Glu Lys Thr Gln Thr Leu His Lys Phe Ile Leu Leu Phe Ala
    205                 210                 215

gtg ttc gac gag ggc aag agc tgg cac agc gag acc aag aac agc ctg      723
Val Phe Asp Glu Gly Lys Ser Trp His Ser Glu Thr Lys Asn Ser Leu
220                 225                 230                 235

atg cag gac cgc gac gcc gcc agc gcc cgc gcc tgg ccc aag atg cac      771
Met Gln Asp Arg Asp Ala Ala Ser Ala Arg Ala Trp Pro Lys Met His
                240                 245                 250

acc gtg aac ggc tac gtg aac cgc agc ctg ccc ggc ctg atc ggc tgc      819
Thr Val Asn Gly Tyr Val Asn Arg Ser Leu Pro Gly Leu Ile Gly Cys
            255                 260                 265

cac cgc aag agc gtg tac tgg cac gtg atc ggc atg ggc acc acc ccc      867
His Arg Lys Ser Val Tyr Trp His Val Ile Gly Met Gly Thr Thr Pro
        270                 275                 280

gag gtg cac agc atc ttc ctg gag ggc cac acc ttc ctg gtg cgc aac      915
Glu Val His Ser Ile Phe Leu Glu Gly His Thr Phe Leu Val Arg Asn
    285                 290                 295

cac cgc cag gcc agc ctg gag atc agc ccc atc acc ttc ctg acc gcc      963
His Arg Gln Ala Ser Leu Glu Ile Ser Pro Ile Thr Phe Leu Thr Ala
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Gln Thr Leu Leu Met Asp Leu Gly Gln Phe Leu Leu Phe Cys His Ile
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agc agc cac cag cac gac ggc atg gag gcc tac gtg aag gtg gac agc     1059
Ser Ser His Gln His Asp Gly Met Glu Ala Tyr Val Lys Val Asp Ser
            335                 340                 345

tgc ccc gag gag ccc cag ctg cgc atg aag aac aac gag gag gcc gag     1107
Cys Pro Glu Glu Pro Gln Leu Arg Met Lys Asn Asn Glu Glu Ala Glu
        350                 355                 360

gac tac gac gac gac ctg acc gac agc gag atg gac gtg gtg cgc ttc     1155
Asp Tyr Asp Asp Asp Leu Thr Asp Ser Glu Met Asp Val Val Arg Phe
    365                 370                 375

gac gac gac aac agc ccc agc ttc atc cag atc cgc agc gtg gcc aag     1203
Asp Asp Asp Asn Ser Pro Ser Phe Ile Gln Ile Arg Ser Val Ala Lys
380                 385                 390                 395

aag cac ccc aag acc tgg gtg cac tac atc gcc gcc gag gag gag gac     1251
Lys His Pro Lys Thr Trp Val His Tyr Ile Ala Ala Glu Glu Glu Asp
                400                 405                 410

tgg gac tac gcc ccc ctg gtg ctg gcc ccc gac gac cgc agc tac aag     1299
Trp Asp Tyr Ala Pro Leu Val Leu Ala Pro Asp Asp Arg Ser Tyr Lys
            415                 420                 425

agc cag tac ctg aac aac ggc ccc cag cgc atc ggc cgc aag tac aag     1347
Ser Gln Tyr Leu Asn Asn Gly Pro Gln Arg Ile Gly Arg Lys Tyr Lys
        430                 435                 440

aag gtg cgc ttc atg gcc tac acc gac gag acc ttc aag acc cgc gag     1395
Lys Val Arg Phe Met Ala Tyr Thr Asp Glu Thr Phe Lys Thr Arg Glu
    445                 450                 455

gcc atc cag cac gag agc ggc atc ctg ggc ccc ctg ctg tac ggc gag     1443
Ala Ile Gln His Glu Ser Gly Ile Leu Gly Pro Leu Leu Tyr Gly Glu
460                 465                 470                 475

gtg ggc gac acc ctg ctg atc atc ttc aag aac cag gcc agc cgc ccc     1491
Val Gly Asp Thr Leu Leu Ile Ile Phe Lys Asn Gln Ala Ser Arg Pro
                480                 485                 490

tac aac atc tac ccc cac ggc atc acc gac gtg cgc ccc ctg tac agc     1539
Tyr Asn Ile Tyr Pro His Gly Ile Thr Asp Val Arg Pro Leu Tyr Ser
            495                 500                 505

cgc cgc ctg ccc aag ggc gtg aag cac ctg aag gac ttc ccc atc ctg     1587
Arg Arg Leu Pro Lys Gly Val Lys His Leu Lys Asp Phe Pro Ile Leu
        510                 515                 520

ccc ggc gag atc ttc aag tac aag tgg acc gtg acc gtg gag gac ggc     1635
Pro Gly Glu Ile Phe Lys Tyr Lys Trp Thr Val Thr Val Glu Asp Gly
    525                 530                 535
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ccc acc aag agc gac ccc cgc tgc ctg acc cgc tac tac agc agc ttc     1683
Pro Thr Lys Ser Asp Pro Arg Cys Leu Thr Arg Tyr Tyr Ser Ser Phe
540                 545                 550                 555

gtg aac atg gag cgc gac ctg gcc agc ggc ctg atc ggc ccc ctg ctg     1731
Val Asn Met Glu Arg Asp Leu Ala Ser Gly Leu Ile Gly Pro Leu Leu
                560                 565                 570

atc tgc tac aag gag agc gtg gac cag cgc ggc aac cag atc atg agc     1779
Ile Cys Tyr Lys Glu Ser Val Asp Gln Arg Gly Asn Gln Ile Met Ser
            575                 580                 585

gac aag cgc aac gtg atc ctg ttc agc gtg ttc gac gag aac cgc agc     1827
Asp Lys Arg Asn Val Ile Leu Phe Ser Val Phe Asp Glu Asn Arg Ser
        590                 595                 600

tgg tac ctg acc gag aac atc cag cgc ttc ctg ccc aac ccc gcc ggc     1875
Trp Tyr Leu Thr Glu Asn Ile Gln Arg Phe Leu Pro Asn Pro Ala Gly
    605                 610                 615

gtg cag ctg gag gac ccc gag ttc cag gcc agc aac atc atg cac agc     1923
Val Gln Leu Glu Asp Pro Glu Phe Gln Ala Ser Asn Ile Met His Ser
620                 625                 630                 635

atc aac ggc tac gtg ttc gac agc ctg cag ctg agc gtg tgc ctg cac     1971
Ile Asn Gly Tyr Val Phe Asp Ser Leu Gln Leu Ser Val Cys Leu His
                640                 645                 650

gag gtg gcc tac tgg tac atc ctg agc atc ggc gcc cag acc gac ttc     2019
Glu Val Ala Tyr Trp Tyr Ile Leu Ser Ile Gly Ala Gln Thr Asp Phe
            655                 660                 665

ctg agc gtg ttc ttc agc ggc tac acc ttc aag cac aag atg gtg tac     2067
Leu Ser Val Phe Phe Ser Gly Tyr Thr Phe Lys His Lys Met Val Tyr
        670                 675                 680

gag gac acc ctg acc ctg ttc ccc ttc agc ggc gag acc gtg ttc atg     2115
Glu Asp Thr Leu Thr Leu Phe Pro Phe Ser Gly Glu Thr Val Phe Met
    685                 690                 695

agc atg gag aac ccc ggc ctg tgg atc ctg ggc tgc cac aac agc gac     2163
Ser Met Glu Asn Pro Gly Leu Trp Ile Leu Gly Cys His Asn Ser Asp
700                 705                 710                 715

ttc cgc aac cgc ggc atg acc gcc ctg ctg aag gtg agc agc tgc gac     2211
Phe Arg Asn Arg Gly Met Thr Ala Leu Leu Lys Val Ser Ser Cys Asp
                720                 725                 730

aag aac acc ggc gac tac tac gag gac agc tac gag gac atc agc gcc     2259
Lys Asn Thr Gly Asp Tyr Tyr Glu Asp Ser Tyr Glu Asp Ile Ser Ala
            735                 740                 745

tac ctg ctg agc aag aac aac gcc atc gag ccc cgc ctg gag gag atc     2307
Tyr Leu Leu Ser Lys Asn Asn Ala Ile Glu Pro Arg Leu Glu Glu Ile
        750                 755                 760
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acc cgc acc acc ctg cag agc gac cag gag gag atc gac tac gac gac      2355
Thr Arg Thr Thr Leu Gln Ser Asp Gln Glu Glu Ile Asp Tyr Asp Asp
    765                 770                 775

acc atc agc gtg gag atg aag aag gag gac ttc gac atc tac gac gag      2403
Thr Ile Ser Val Glu Met Lys Lys Glu Asp Phe Asp Ile Tyr Asp Glu
780                 785                 790                 795

gac gag aac cag agc ccc cgc agc ttc cag aag aag acc cgc cac tac      2451
Asp Glu Asn Gln Ser Pro Arg Ser Phe Gln Lys Lys Thr Arg His Tyr
                800                 805                 810

ttc atc gcc gcc gtg gag cgc ctg tgg gac tac ggc atg agc agc agc      2499
Phe Ile Ala Ala Val Glu Arg Leu Trp Asp Tyr Gly Met Ser Ser Ser
            815                 820                 825

ccc cac gtg ctg cgc aac cgc gcc cag agc ggc agc gtg ccc cag ttc      2547
Pro His Val Leu Arg Asn Arg Ala Gln Ser Gly Ser Val Pro Gln Phe
        830                 835                 840

aag aag gtg gtg ttc cag gag ttc acc gac ggc agc ttc acc cag ccc      2595
Lys Lys Val Val Phe Gln Glu Phe Thr Asp Gly Ser Phe Thr Gln Pro
    845                 850                 855

ctg tac cgc ggc gag ctg aac gag cac ctg ggc ctg ctg ggc ccc tac      2643
Leu Tyr Arg Gly Glu Leu Asn Glu His Leu Gly Leu Leu Gly Pro Tyr
860                 865                 870                 875

atc cgc gcc gag gtg gag gac aac atc atg gtg acc ttc cgc aac cag      2691
Ile Arg Ala Glu Val Glu Asp Asn Ile Met Val Thr Phe Arg Asn Gln
                880                 885                 890

gcc agc cgc ccc tac agc ttc tac agc agc ctg atc agc tac gag gag      2739
Ala Ser Arg Pro Tyr Ser Phe Tyr Ser Ser Leu Ile Ser Tyr Glu Glu
            895                 900                 905

gac cag cgc cag ggc gcc gag ccc cgc aag aac ttc gtg aag ccc aac      2787
Asp Gln Arg Gln Gly Ala Glu Pro Arg Lys Asn Phe Val Lys Pro Asn
        910                 915                 920

gag acc aag acc tac ttc tgg aag gtg cag cac cac atg gcc ccc acc      2835
Glu Thr Lys Thr Tyr Phe Trp Lys Val Gln His His Met Ala Pro Thr
    925                 930                 935

aag gac gag ttc gac tgc aag gcc tgg gcc tac ttc agc gac gtg gac      2883
Lys Asp Glu Phe Asp Cys Lys Ala Trp Ala Tyr Phe Ser Asp Val Asp
940                 945                 950                 955

ctg gag aag gac gtg cac agc ggc ctg atc ggg ccc ctg ctg gtg tgc      2931
Leu Glu Lys Asp Val His Ser Gly Leu Ile Gly Pro Leu Leu Val Cys
                960                 965                 970

cac acc aac acc ctg aac ccc gcc cac ggc cgc cag gtg acc gtg cag      2979
His Thr Asn Thr Leu Asn Pro Ala His Gly Arg Gln Val Thr Val Gln
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gag ttc gcc ctg ttc ttc acc atc ttc gac gag acc aag agc tgg tac      3027
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Phe Thr Glu Asn Met Glu Arg Asn Cys Arg Ala Pro Cys Asn Ile Gln
    1005                1010                1015

atg gag gac ccc acc ttc aag gag aac tac cgc ttc cac gcc atc aac     3123
Met Glu Asp Pro Thr Phe Lys Glu Asn Tyr Arg Phe His Ala Ile Asn
1020                1025                1030                1035

ggc tac atc atg gac acc ctg aaa ggc ctg gtg atg gcc cag gac cag     3171
Gly Tyr Ile Met Asp Thr Leu Lys Gly Leu Val Met Ala Gln Asp Gln
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cgc atc cgc tgg tac ctg ctg agc atg ggc agc aac gag aac atc cac     3219
Arg Ile Arg Trp Tyr Leu Leu Ser Met Gly Ser Asn Glu Asn Ile His
            1055                1060                1065

agc atc cac ttc agc ggc cac gtg ttc acc gtg cgc aag aag gag gag     3267
Ser Ile His Phe Ser Gly His Val Phe Thr Val Arg Lys Lys Glu Glu
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tac aag atg gcc ctg tac aac ctg tac ccc ggc gtg ttc gag acc gtg     3315
Tyr Lys Met Ala Leu Tyr Asn Leu Tyr Pro Gly Val Phe Glu Thr Val
    1085                1090                1095

gag atg ctg ccc agc aag gcc ggc atc tgg cgc gtg gag tgc ctg atc     3363
Glu Met Leu Pro Ser Lys Ala Gly Ile Trp Arg Val Glu Cys Leu Ile
1100                1105                1110                1115

ggc gag cac ctg cac gcc ggc atg agc acc ctg ttc ctg gtg tac agc     3411
Gly Glu His Leu His Ala Gly Met Ser Thr Leu Phe Leu Val Tyr Ser
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aac aag tgc cag acc ccc ctg ggc atg gcc agc ggc cac atc cgc gac     3459
Asn Lys Cys Gln Thr Pro Leu Gly Met Ala Ser Gly His Ile Arg Asp
            1135                1140                1145

ttc cag atc acc gcc agc ggc cag tac ggc cag tgg gcc ccc aag ctg     3507
Phe Gln Ile Thr Ala Ser Gly Gln Tyr Gly Gln Trp Ala Pro Lys Leu
        1150                1155                1160

gcc cgc ctg cac tac agc ggc agc atc aac gcc tgg agc acc aag gag     3555
Ala Arg Leu His Tyr Ser Gly Ser Ile Asn Ala Trp Ser Thr Lys Glu
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ccc ttc agc tgg atc aag gtg gac ctg ctg gcc ccc atg atc atc cac     3603
Pro Phe Ser Trp Ile Lys Val Asp Leu Leu Ala Pro Met Ile Ile His
1180                1185                1190                1195

ggc atc aag acc cag ggc gcc cgc cag aac ttc agc agc ctg tac atc     3651
Gly Ile Lys Thr Gln Gly Ala Arg Gln Asn Phe Ser Ser Leu Tyr Ile
                1200                1205                1210

agc cag ttc atc atc atg tac agc ctg gac ggc aag aag tgg cag acc     3699
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Tyr Arg Gly Asn Ser Thr Gly Thr Leu Met Val Phe Phe Gly Asn Val
        1230                1235                1240

gac agc agc ggc atc aag cac aac atc ttc aac ccc ccc atc atc gcc     3795
Asp Ser Ser Gly Ile Lys His Asn Ile Phe Asn Pro Pro Ile Ile Ala
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cgc tac atc cgc ctg cac ccc acc cac tac agc atc cgc agc acc ctg     3843
Arg Tyr Ile Arg Leu His Pro Thr His Tyr Ser Ile Arg Ser Thr Leu
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cgc atg gag ctg atg ggc tgc gac ctg aac agc tgc agc atg ccc ctg     3891
Arg Met Glu Leu Met Gly Cys Asp Leu Asn Ser Cys Ser Met Pro Leu
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ggc atg gag agc aag gcc atc agc gac gcc cag atc acc gcc agc agc     3939
Gly Met Glu Ser Lys Ala Ile Ser Asp Ala Gln Ile Thr Ala Ser Ser
            1295                1300                1305

tac ttc acc aac atg ttc gcc acc tgg agc ccc agc aag gcc cgc ctg     3987
Tyr Phe Thr Asn Met Phe Ala Thr Trp Ser Pro Ser Lys Ala Arg Leu
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cac ctg cag ggc cgc agc aac gcc tgg cgc ccc cag gtg aac aac ccc     4035
His Leu Gln Gly Arg Ser Asn Ala Trp Arg Pro Gln Val Asn Asn Pro
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aag gag tgg ctg cag gtg gac ttc cag aag acc atg aag gtg acc ggc     4083
Lys Glu Trp Leu Gln Val Asp Phe Gln Lys Thr Met Lys Val Thr Gly
1340                1345                1350                1355

gtg acc acc cag ggc gtg aag agc ctg ctg acc agc atg tac gtg aag     4131
Val Thr Thr Gln Gly Val Lys Ser Leu Leu Thr Ser Met Tyr Val Lys
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gag ttc ctg atc agc agc agc cag gac ggc cac cag tgg acc ctg ttc     4179
Glu Phe Leu Ile Ser Ser Ser Gln Asp Gly His Gln Trp Thr Leu Phe
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ttc cag aac ggc aag gtg aag gtg ttc cag ggc aac cag gac agc ttc     4227
Phe Gln Asn Gly Lys Val Lys Val Phe Gln Gly Asn Gln Asp Ser Phe
        1390                1395                1400

acc ccc gtg gtg aac agc ctg gac ccc ccc ctg ctg acc cgc tac ctg     4275
Thr Pro Val Val Asn Ser Leu Asp Pro Pro Leu Leu Thr Arg Tyr Leu
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cgc atc cac ccc cag agc tgg gtg cac cag atc gcc ctg cgc atg gag     4323
Arg Ile His Pro Gln Ser Trp Val His Gln Ile Ala Leu Arg Met Glu
1420                1425                1430                1435

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                     1               5                  10

tgc ctg ctg cgc ttc tgc ttc agc gcc acc cgc cgc tac tac ctg ggc        99
Cys Leu Leu Arg Phe Cys Phe Ser Ala Thr Arg Arg Tyr Tyr Leu Gly
            15                  20                  25

gcc gtg gag ctg agc tgg gac tac atg cag agc gac ctg ggc gag ctg       147
Ala Val Glu Leu Ser Trp Asp Tyr Met Gln Ser Asp Leu Gly Glu Leu
         30                  35                  40

ccc gtg gac gcc cgc ttc ccc ccc cgc gtg ccc aag agc ttc ccc ttc       195
Pro Val Asp Ala Arg Phe Pro Pro Arg Val Pro Lys Ser Phe Pro Phe
     45                  50                  55

aac acc agc gtg gtg tac aag aag acc ctg ttc gtg gag ttc acc gac       243
Asn Thr Ser Val Val Tyr Lys Lys Thr Leu Phe Val Glu Phe Thr Asp
 60                  65                  70                  75

cac ctg ttc aac atc gcc aag ccc cgc ccc ccc tgg atg ggc ctg ctg       291
His Leu Phe Asn Ile Ala Lys Pro Arg Pro Pro Trp Met Gly Leu Leu
                 80                  85                  90

ggc ccc acc atc cag gcc gag gtg tac gac acc gtg gtg atc acc ctg       339
Gly Pro Thr Ile Gln Ala Glu Val Tyr Asp Thr Val Val Ile Thr Leu
            95                  100                 105

aag aac atg gcc agc cac ccc gtg agc ctg cac gcc gtg ggc gtg agc       387
Lys Asn Met Ala Ser His Pro Val Ser Leu His Ala Val Gly Val Ser
        110                 115                 120

tac tgg aag gcc agc gag ggc gcc gag tac gac gac cag acc agc cag       435
Tyr Trp Lys Ala Ser Glu Gly Ala Glu Tyr Asp Asp Gln Thr Ser Gln
    125                 130                 135

cgc gag aag gag gac gac aag gtg ttc ccc ggc ggc agc cac acc tac       483
Arg Glu Lys Glu Asp Asp Lys Val Phe Pro Gly Gly Ser His Thr Tyr
140                 145                 150                 155

gtg tgg cag gtg ctg aag gag aac ggc ccc atg gcc agc gac ccc ctg       531
Val Trp Gln Val Leu Lys Glu Asn Gly Pro Met Ala Ser Asp Pro Leu
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                160                 165                 170

tgc ctg acc tac agc tac ctg agc cac gtg gac ctg gtg aag gac ctg      579
Cys Leu Thr Tyr Ser Tyr Leu Ser His Val Asp Leu Val Lys Asp Leu
            175                 180                 185

aac agc ggc ctg atc ggc gcc ctg ctg gtg tgc cgc gag ggc agc ctg      627
Asn Ser Gly Leu Ile Gly Ala Leu Leu Val Cys Arg Glu Gly Ser Leu
        190                 195                 200

gcc aag gag aag acc cag acc ctg cac aag ttc atc ctg ctg ttc gcc      675
Ala Lys Glu Lys Thr Gln Thr Leu His Lys Phe Ile Leu Leu Phe Ala
    205                 210                 215

gtg ttc gac gag ggc aag agc tgg cac agc gag acc aag aac agc ctg      723
Val Phe Asp Glu Gly Lys Ser Trp His Ser Glu Thr Lys Asn Ser Leu
220                 225                 230                 235

atg cag gac cgc gac gcc gcc agc gcc cgc gcc tgg ccc aag atg cac      771
Met Gln Asp Arg Asp Ala Ala Ser Ala Arg Ala Trp Pro Lys Met His
                240                 245                 250

acc gtg aac ggc tac gtg aac cgc agc ctg ccc ggc ctg atc ggc tgc      819
Thr Val Asn Gly Tyr Val Asn Arg Ser Leu Pro Gly Leu Ile Gly Cys
            255                 260                 265

cac cgc aag agc gtg tac tgg cac gtg atc ggc atg ggc acc acc ccc      867
His Arg Lys Ser Val Tyr Trp His Val Ile Gly Met Gly Thr Thr Pro
        270                 275                 280

gag gtg cac agc atc ttc ctg gag ggc cac acc ttc ctg gtg cgc aac      915
Glu Val His Ser Ile Phe Leu Glu Gly His Thr Phe Leu Val Arg Asn
    285                 290                 295

cac cgc cag gcc agc ctg gag atc agc ccc atc acc ttc ctg acc gcc      963
His Arg Gln Ala Ser Leu Glu Ile Ser Pro Ile Thr Phe Leu Thr Ala
300                 305                 310                 315

cag acc ctg ctg atg gac ctg ggc cag ttc ctg ctg ttc tgc cac atc     1011
Gln Thr Leu Leu Met Asp Leu Gly Gln Phe Leu Leu Phe Cys His Ile
                320                 325                 330

agc agc cac cag cac gac ggc atg gag gcc tac gtg aag gtg gac agc     1059
Ser Ser His Gln His Asp Gly Met Glu Ala Tyr Val Lys Val Asp Ser
            335                 340                 345

tgc ccc gag gag ccc cag ctg cgc atg aag aac aac gag gag gcc gag     1107
Cys Pro Glu Glu Pro Gln Leu Arg Met Lys Asn Asn Glu Glu Ala Glu
        350                 355                 360

gac tac gac gac gac ctg acc gac agc gag atg gac gtg gtg cgc ttc     1155
Asp Tyr Asp Asp Asp Leu Thr Asp Ser Glu Met Asp Val Val Arg Phe
    365                 370                 375

gac gac gac aac agc ccc agc ttc atc cag atc cgc agc gtg gcc aag     1203
Asp Asp Asp Asn Ser Pro Ser Phe Ile Gln Ile Arg Ser Val Ala Lys
380                 385                 390                 395
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aag cag ggg aag acc tgg gtg cac tac atc gcc gcc gag gag gag gac     1251
Lys Gln Gly Lys Thr Trp Val His Tyr Ile Ala Ala Glu Glu Glu Asp
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tgg gac tac gcc ccc ctg gtg ctg gcc ccc gac gac cgc agc tac aag     1299
Trp Asp Tyr Ala Pro Leu Val Leu Ala Pro Asp Asp Arg Ser Tyr Lys
            415                 420                 425

agc cag tac ctg aac aac ggc ccc cag cgc atc ggc cgc aag tac aag     1347
Ser Gln Tyr Leu Asn Asn Gly Pro Gln Arg Ile Gly Arg Lys Tyr Lys
        430                 435                 440

aag gtg cgc ttc atg gcc tac acc gac gag acc ttc aag acc cgc gag     1395
Lys Val Arg Phe Met Ala Tyr Thr Asp Glu Thr Phe Lys Thr Arg Glu
    445                 450                 455

gcc atc cag cac gag agc ggc atc ctg ggc ccc ctg ctg tac ggc gag     1443
Ala Ile Gln His Glu Ser Gly Ile Leu Gly Pro Leu Leu Tyr Gly Glu
460                 465                 470                 475

gtg ggc gac acc ctg ctg atc atc ttc aag aac cag gcc agc cgc ccc     1491
Val Gly Asp Thr Leu Leu Ile Ile Phe Lys Asn Gln Ala Ser Arg Pro
                480                 485                 490

tac aac atc tac ccc cac ggc atc acc gac gtg cgc ccc ctg tac agc     1539
Tyr Asn Ile Tyr Pro His Gly Ile Thr Asp Val Arg Pro Leu Tyr Ser
            495                 500                 505

cgc cgc ctg ccc aag ggc gtg aag cac ctg aag gac ttc ccc atc ctg     1587
Arg Arg Leu Pro Lys Gly Val Lys His Leu Lys Asp Phe Pro Ile Leu
        510                 515                 520

ccc ggc gag atc ttc aag tac aag tgg acc gtg acc gtg gag gac ggc     1635
Pro Gly Glu Ile Phe Lys Tyr Lys Trp Thr Val Thr Val Glu Asp Gly
    525                 530                 535

ccc acc aag agc gac ccc cgc tgc ctg acc cgc tac tac agc agc ttc     1683
Pro Thr Lys Ser Asp Pro Arg Cys Leu Thr Arg Tyr Tyr Ser Ser Phe
540                 545                 550                 555

gtg aac atg gag cgc gac ctg gcc agc ggc ctg atc ggc ccc ctg ctg     1731
Val Asn Met Glu Arg Asp Leu Ala Ser Gly Leu Ile Gly Pro Leu Leu
                560                 565                 570

atc tgc tac aag gag agc gtg gac cag cgc ggc aac cag atc atg agc     1779
Ile Cys Tyr Lys Glu Ser Val Asp Gln Arg Gly Asn Gln Ile Met Ser
            575                 580                 585

gac aag cgc aac gtg atc ctg ttc agc gtg ttc gac gag aac cgc agc     1827
Asp Lys Arg Asn Val Ile Leu Phe Ser Val Phe Asp Glu Asn Arg Ser
        590                 595                 600

tgg tac ctg acc gag aac atc cag cgc ttc ctg ccc aac ccc gcc ggc     1875
Trp Tyr Leu Thr Glu Asn Ile Gln Arg Phe Leu Pro Asn Pro Ala Gly
    605                 610                 615
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gtg cag ctg gag gac ccc gag ttc cag gcc agc aac atc atg cac agc     1923
Val Gln Leu Glu Asp Pro Glu Phe Gln Ala Ser Asn Ile Met His Ser
620                 625                 630                 635

atc aac ggc tac gtg ttc gac agc ctg cag ctg agc gtg tgc ctg cac     1971
Ile Asn Gly Tyr Val Phe Asp Ser Leu Gln Leu Ser Val Cys Leu His
                640                 645                 650

gag gtg gcc tac tgg tac atc ctg agc atc ggc gcc cag acc gac ttc     2019
Glu Val Ala Tyr Trp Tyr Ile Leu Ser Ile Gly Ala Gln Thr Asp Phe
            655                 660                 665

ctg agc gtg ttc ttc agc ggc tac acc ttc aag cac aag atg gtg tac     2067
Leu Ser Val Phe Phe Ser Gly Tyr Thr Phe Lys His Lys Met Val Tyr
        670                 675                 680

gag gac acc ctg acc ctg ttc ccc ttc agc ggc gag acc gtg ttc atg     2115
Glu Asp Thr Leu Thr Leu Phe Pro Phe Ser Gly Glu Thr Val Phe Met
    685                 690                 695

agc atg gag aac ccc ggc ctg tgg atc ctg ggc tgc cac aac agc gac     2163
Ser Met Glu Asn Pro Gly Leu Trp Ile Leu Gly Cys His Asn Ser Asp
700                 705                 710                 715

ttc cgc aac cgc ggc atg acc gcc ctg ctg aag gtg agc agc tgc gac     2211
Phe Arg Asn Arg Gly Met Thr Ala Leu Leu Lys Val Ser Ser Cys Asp
                720                 725                 730

aag aac acc ggc gac tac tac gag gac agc tac gag gac atc agc gcc     2259
Lys Asn Thr Gly Asp Tyr Tyr Glu Asp Ser Tyr Glu Asp Ile Ser Ala
            735                 740                 745

tac ctg ctg agc aag aac aac gcc atc gag ccc cgc agg cgc agg cgc     2307
Tyr Leu Leu Ser Lys Asn Asn Ala Ile Glu Pro Arg Arg Arg Arg Arg
        750                 755                 760

gag atc acc cgc acc acc ctg cag agc gac cag gag gag atc gac tac     2355
Glu Ile Thr Arg Thr Thr Leu Gln Ser Asp Gln Glu Glu Ile Asp Tyr
    765                 770                 775

gac gac acc atc agc gtg gag atg aag aag gag gac ttc gac atc tac     2403
Asp Asp Thr Ile Ser Val Glu Met Lys Lys Glu Asp Phe Asp Ile Tyr
780                 785                 790                 795

gac gag gac gag aac cag agc ccc cgc agc ttc cag aag aag acc cgc     2451
Asp Glu Asp Glu Asn Gln Ser Pro Arg Ser Phe Gln Lys Lys Thr Arg
                800                 805                 810

cac tac ttc atc gcc gcc gtg gag cgc ctg tgg gac tac ggc atg agc     2499
His Tyr Phe Ile Ala Ala Val Glu Arg Leu Trp Asp Tyr Gly Met Ser
            815                 820                 825

agc agc ccc cac gtg ctg cgc aac cgc gcc cag agc ggc agc gtg ccc     2547
Ser Ser Pro His Val Leu Arg Asn Arg Ala Gln Ser Gly Ser Val Pro
        830                 835                 840

cag ttc aag aag gtg gtg ttc cag gag ttc acc gac ggc agc ttc acc     2595
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Gln Phe Lys Lys Val Val Phe Gln Glu Phe Thr Asp Gly Ser Phe Thr
    845                 850                 855

cag ccc ctg tac cgc ggc gag ctg aac gag cac ctg ggc ctg ctg ggc     2643
Gln Pro Leu Tyr Arg Gly Glu Leu Asn Glu His Leu Gly Leu Leu Gly
860                 865                 870                 875

ccc tac atc cgc gcc gag gtg gag gac aac atc atg gtg acc ttc cgc     2691
Pro Tyr Ile Arg Ala Glu Val Glu Asp Asn Ile Met Val Thr Phe Arg
                880                 885                 890

aac cag gcc agc cgc ccc tac agc ttc tac agc agc ctg atc agc tac     2739
Asn Gln Ala Ser Arg Pro Tyr Ser Phe Tyr Ser Ser Leu Ile Ser Tyr
            895                 900                 905

gag gag gac cag cgc cag ggc gcc gag ccc cgc aag aac ttc gtg aag     2787
Glu Glu Asp Gln Arg Gln Gly Ala Glu Pro Arg Lys Asn Phe Val Lys
        910                 915                 920

ccc aac gag acc aag acc tac ttc tgg aag gtg cag cac cac atg gcc     2835
Pro Asn Glu Thr Lys Thr Tyr Phe Trp Lys Val Gln His His Met Ala
    925                 930                 935

ccc acc aag gac gag ttc gac tgc aag gcc tgg gcc tac ttc agc gac     2883
Pro Thr Lys Asp Glu Phe Asp Cys Lys Ala Trp Ala Tyr Phe Ser Asp
940                 945                 950                 955

gtg gac ctg gag aag gac gtg cac agc ggc ctg atc ggc ccc ctg ctg     2931
Val Asp Leu Glu Lys Asp Val His Ser Gly Leu Ile Gly Pro Leu Leu
                960                 965                 970

gtg tgc cac acc aac acc ctg aac ccc gcc cac ggc cgc cag gtg acc     2979
Val Cys His Thr Asn Thr Leu Asn Pro Ala His Gly Arg Gln Val Thr
            975                 980                 985

gtg cag gag ttc gcc ctg ttc ttc acc atc ttc gac gag acc aag agc     3027
Val Gln Glu Phe Ala Leu Phe Phe Thr Ile Phe Asp Glu Thr Lys Ser
         990                 995                1000

tgg tac ttc acc gag aac atg gag cgc aac tgc cgc gcc ccc tgc aac     3075
Trp Tyr Phe Thr Glu Asn Met Glu Arg Asn Cys Arg Ala Pro Cys Asn
    1005                1010                1015

atc cag atg gag gac ccc acc ttc aag gag aac tac cgc ttc cac gcc     3123
Ile Gln Met Glu Asp Pro Thr Phe Lys Glu Asn Tyr Arg Phe His Ala
1020                1025                1030                1035

atc aac ggc tac atc atg gac acc ctg ccc ggc ctg gtg atg gcc cag     3171
Ile Asn Gly Tyr Ile Met Asp Thr Leu Pro Gly Leu Val Met Ala Gln
                1040                1045                1050

gac cag cgc atc cgc tgg tac ctg ctg agc atg ggc agc aac gag aac     3219
Asp Gln Arg Ile Arg Trp Tyr Leu Leu Ser Met Gly Ser Asn Glu Asn
            1055                1060                1065

atc cac agc atc cac ttc agc ggc cac gtg ttc acc gtg cgc aag aag     3267
Ile His Ser Ile His Phe Ser Gly His Val Phe Thr Val Arg Lys Lys
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        1070                1075                1080

gag gag tac aag atg gcc ctg tac aac ctg tac ccc ggc gtg ttc gag     3315
Glu Glu Tyr Lys Met Ala Leu Tyr Asn Leu Tyr Pro Gly Val Phe Glu
    1085                1090                1095

acc gtg gag atg ctg ccc agc aag gcc ggc atc tgg cgc gtg gag tgc     3363
Thr Val Glu Met Leu Pro Ser Lys Ala Gly Ile Trp Arg Val Glu Cys
1100                1105                1110                1115

ctg atc ggc gag cac ctg cac gcc ggc atg agc acc ctg ttc ctg gtg     3411
Leu Ile Gly Glu His Leu His Ala Gly Met Ser Thr Leu Phe Leu Val
                1120                1125                1130

tac agc aac aag tgc cag acc ccc ctg ggc atg gcc agc ggc cac atc     3459
Tyr Ser Asn Lys Cys Gln Thr Pro Leu Gly Met Ala Ser Gly His Ile
            1135                1140                1145

cgc gac ttc cag atc acc gcc agc ggc cag tac ggc cag tgg gcc ccc     3507
Arg Asp Phe Gln Ile Thr Ala Ser Gly Gln Tyr Gly Gln Trp Ala Pro
        1150                1155                1160

aag ctg gcc cgc ctg cac tac agc ggc agc atc aac gcc tgg agc acc     3555
Lys Leu Ala Arg Leu His Tyr Ser Gly Ser Ile Asn Ala Trp Ser Thr
    1165                1170                1175

aag gag ccc ttc agc tgg atc aag gtg gac ctg ctg gcc ccc atg atc     3603
Lys Glu Pro Phe Ser Trp Ile Lys Val Asp Leu Leu Ala Pro Met Ile
1180                1185                1190                1195

atc cac ggc atc aag acc cag ggc gcc cgc cag aag ttc agc agc ctg     3651
Ile His Gly Ile Lys Thr Gln Gly Ala Arg Gln Lys Phe Ser Ser Leu
                1200                1205                1210

tac atc agc cag ttc atc atc atg tac agc ctg gac ggc aag aag tgg     3699
Tyr Ile Ser Gln Phe Ile Ile Met Tyr Ser Leu Asp Gly Lys Lys Trp
            1215                1220                1225

cag acc tac cgc ggc aac agc acc ggc acc ctg atg gtg ttc ttc ggc     3747
Gln Thr Tyr Arg Gly Asn Ser Thr Gly Thr Leu Met Val Phe Phe Gly
        1230                1235                1240

aac gtg gac agc agc ggc atc aag cac aac atc ttc aac ccc ccc atc     3795
Asn Val Asp Ser Ser Gly Ile Lys His Asn Ile Phe Asn Pro Pro Ile
    1245                1250                1255

atc gcc cgc tac atc cgc ctg cac ccc acc cac tac agc atc cgc agc     3843
Ile Ala Arg Tyr Ile Arg Leu His Pro Thr His Tyr Ser Ile Arg Ser
1260                1265                1270                1275

acc ctg cgc atg gag ctg atg ggc tgc gac ctg aac agc tgc agc atg     3891
Thr Leu Arg Met Glu Leu Met Gly Cys Asp Leu Asn Ser Cys Ser Met
                1280                1285                1290

ccc ctg ggc atg gag agc aag gcc atc agc gac gcc cag atc acc gcc     3939
Pro Leu Gly Met Glu Ser Lys Ala Ile Ser Asp Ala Gln Ile Thr Ala
            1295                1300                1305
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agc agc tac ttc acc aac atg ttc gcc acc tgg agc ccc agc aag gcc     3987
Ser Ser Tyr Phe Thr Asn Met Phe Ala Thr Trp Ser Pro Ser Lys Ala
        1310                1315                1320

cgc ctg cac ctg cag ggc cgc agc aac gcc tgg cgc ccc cag gtg aac     4035
Arg Leu His Leu Gln Gly Arg Ser Asn Ala Trp Arg Pro Gln Val Asn
    1325                1330                1335

aac ccc aag gag tgg ctg cag gtg gac ttc cag aag acc atg aag gtg     4083
Asn Pro Lys Glu Trp Leu Gln Val Asp Phe Gln Lys Thr Met Lys Val
1340                1345                1350                1355

acc ggc gtg acc acc cag ggc gtg aag agc ctg ctg acc agc atg tac     4131
Thr Gly Val Thr Thr Gln Gly Val Lys Ser Leu Leu Thr Ser Met Tyr
                1360                1365                1370

gtg aag gag ttc ctg atc agc agc agc cag gac ggc cac cag tgg acc     4179
Val Lys Glu Phe Leu Ile Ser Ser Ser Gln Asp Gly His Gln Trp Thr
            1375                1380                1385

ctg ttc ttc cag aac ggc aag gtg aag gtg ttc cag ggc aac cag gac     4227
Leu Phe Phe Gln Asn Gly Lys Val Lys Val Phe Gln Gly Asn Gln Asp
        1390                1395                1400

agc ttc acc ccc gtg gtg aac agc ctg gac ccc ccc ctg ctg acc cgc     4275
Ser Phe Thr Pro Val Val Asn Ser Leu Asp Pro Pro Leu Leu Thr Arg
    1405                1410                1415

tac ctg cgc atc cac ccc cag agc tgg gtg cac cag atc gcc ctg cgc     4323
Tyr Leu Arg Ile His Pro Gln Ser Trp Val His Gln Ile Ala Leu Arg
1420                1425                1430                1435

atg gag gtg ctg ggc tgc gag gcc cag gac ctg tac tagctgcccg          4369
Met Glu Val Leu Gly Cys Glu Ala Gln Asp Leu Tyr
                1440                1445

ggctacaagc tttac                                                   4384
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<210> 3
<211> 1445
<212> PRT
<213> Artificial Sequence

<220>
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<400> 3

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Met Gln Ile Glu Leu Ser Thr Cys Phe Phe Leu Cys Leu Leu Arg Phe
 1               5                  10                  15
Cys Phe Ser Ala Thr Arg Arg Tyr Tyr Leu Gly Ala Val Glu Leu Ser
            20                  25                  30
Trp Asp Tyr Met Gln Ser Asp Leu Gly Glu Leu Pro Val Asp Ala Arg
        35                  40                  45
Phe Pro Pro Arg Val Pro Lys Ser Phe Pro Phe Asn Thr Ser Val Val
    50                  55                  60
Tyr Lys Lys Thr Leu Phe Val Glu Phe Thr Asp His Leu Phe Asn Ile
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65                  70                  75                  80
Ala Lys Pro Arg Pro Pro Trp Met Gly Leu Leu Gly Pro Thr Ile Gln
                85                  90                  95
Ala Glu Val Tyr Asp Thr Val Val Ile Thr Leu Lys Asn Met Ala Ser
            100                 105                 110
His Pro Val Ser Leu His Ala Val Gly Val Ser Tyr Trp Lys Ala Ser
        115                 120                 125
Glu Gly Ala Glu Tyr Asp Asp Gln Thr Ser Gln Arg Glu Lys Glu Asp
    130                 135                 140
Asp Lys Val Phe Pro Gly Gly Ser His Thr Tyr Val Trp Gln Val Leu
145                 150                 155                 160
Lys Glu Asn Gly Pro Met Ala Ser Asp Pro Leu Cys Leu Thr Tyr Ser
                165                 170                 175
Tyr Leu Ser His Val Asp Leu Val Lys Asp Leu Asn Ser Gly Leu Ile
            180                 185                 190
Gly Ala Leu Leu Val Cys Arg Glu Gly Ser Leu Ala Lys Glu Lys Thr
        195                 200                 205
Gln Thr Leu His Lys Phe Ile Leu Leu Phe Ala Val Phe Asp Glu Gly
    210                 215                 220
Lys Ser Trp His Ser Glu Thr Lys Asn Ser Leu Met Gln Asp Arg Asp
225                 230                 235                 240
Ala Ala Ser Ala Arg Ala Trp Pro Lys Met His Thr Val Asn Gly Tyr
                245                 250                 255
Val Asn Arg Ser Leu Pro Gly Leu Ile Gly Cys His Arg Lys Ser Val
            260                 265                 270
Tyr Trp His Val Ile Gly Met Gly Thr Thr Pro Glu Val His Ser Ile
        275                 280                 285
Phe Leu Glu Gly His Thr Phe Leu Val Arg Asn His Arg Gln Ala Ser
    290                 295                 300
Leu Glu Ile Ser Pro Ile Thr Phe Leu Thr Ala Gln Thr Leu Leu Met
305                 310                 315                 320
Asp Leu Gly Gln Phe Leu Leu Phe Cys His Ile Ser Ser His Gln His
                325                 330                 335
Asp Gly Met Glu Ala Tyr Val Lys Val Asp Ser Cys Pro Glu Glu Pro
            340                 345                 350
Gln Leu Arg Met Lys Asn Asn Glu Glu Ala Glu Asp Tyr Asp Asp Asp
        355                 360                 365
Leu Thr Asp Ser Glu Met Asp Val Val Arg Phe Asp Asp Asp Asn Ser
    370                 375                 380
Pro Ser Phe Ile Gln Ile Arg Ser Val Ala Lys Lys His Pro Lys Thr
385                 390                 395                 400
Trp Val His Tyr Ile Ala Ala Glu Glu Glu Asp Trp Asp Tyr Ala Pro
                405                 410                 415
Leu Val Leu Ala Pro Asp Asp Arg Ser Tyr Lys Ser Gln Tyr Leu Asn
            420                 425                 430
Asn Gly Pro Gln Arg Ile Gly Arg Lys Tyr Lys Lys Val Arg Phe Met
        435                 440                 445
Ala Tyr Thr Asp Glu Thr Phe Lys Thr Arg Glu Ala Ile Gln His Glu
    450                 455                 460
Ser Gly Ile Leu Gly Pro Leu Leu Tyr Gly Glu Val Gly Asp Thr Leu
465                 470                 475                 480
Leu Ile Ile Phe Lys Asn Gln Ala Ser Arg Pro Tyr Asn Ile Tyr Pro
                485                 490                 495
His Gly Ile Thr Asp Val Arg Pro Leu Tyr Ser Arg Arg Leu Pro Lys
            500                 505                 510
Gly Val Lys His Leu Lys Asp Phe Pro Ile Leu Pro Gly Glu Ile Phe
        515                 520                 525
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Lys Tyr Lys Trp Thr Val Thr Val Glu Asp Gly Pro Thr Lys Ser Asp
    530                 535                 540
Pro Arg Cys Leu Thr Arg Tyr Tyr Ser Ser Phe Val Asn Met Glu Arg
545                 550                 555                 560
Asp Leu Ala Ser Gly Leu Ile Gly Pro Leu Leu Ile Cys Tyr Lys Glu
                565                 570                 575
Ser Val Asp Gln Arg Gly Asn Gln Ile Met Ser Asp Lys Arg Asn Val
            580                 585                 590
Ile Leu Phe Ser Val Phe Asp Glu Asn Arg Ser Trp Tyr Leu Thr Glu
        595                 600                 605
Asn Ile Gln Arg Phe Leu Pro Asn Pro Ala Gly Val Gln Leu Glu Asp
    610                 615                 620
Pro Glu Phe Gln Ala Ser Asn Ile Met His Ser Ile Asn Gly Tyr Val
625                 630                 635                 640
Phe Asp Ser Leu Gln Leu Ser Val Cys Leu His Glu Val Ala Tyr Trp
                645                 650                 655
Tyr Ile Leu Ser Ile Gly Ala Gln Thr Asp Phe Leu Ser Val Phe Phe
            660                 665                 670
Ser Gly Tyr Thr Phe Lys His Lys Met Val Tyr Glu Asp Thr Leu Thr
        675                 680                 685
Leu Phe Pro Phe Ser Gly Glu Thr Val Phe Met Ser Met Glu Asn Pro
    690                 695                 700
Gly Leu Trp Ile Leu Gly Cys His Asn Ser Asp Phe Arg Asn Arg Gly
705                 710                 715                 720
Met Thr Ala Leu Leu Lys Val Ser Ser Cys Asp Lys Asn Thr Gly Asp
                725                 730                 735
Tyr Tyr Glu Asp Ser Tyr Glu Asp Ile Ser Ala Tyr Leu Leu Ser Lys
            740                 745                 750
Asn Asn Ala Ile Glu Pro Arg Leu Glu Glu Ile Thr Arg Thr Thr Leu
        755                 760                 765
Gln Ser Asp Gln Glu Glu Ile Asp Tyr Asp Asp Thr Ile Ser Val Glu
    770                 775                 780
Met Lys Lys Glu Asp Phe Asp Ile Tyr Asp Glu Asp Glu Asn Gln Ser
785                 790                 795                 800
Pro Arg Ser Phe Gln Lys Lys Thr Arg His Tyr Phe Ile Ala Ala Val
                805                 810                 815
Glu Arg Leu Trp Asp Tyr Gly Met Ser Ser Ser Pro His Val Leu Arg
            820                 825                 830
Asn Arg Ala Gln Ser Gly Ser Val Pro Gln Phe Lys Lys Val Val Phe
        835                 840                 845
Gln Glu Phe Thr Asp Gly Ser Phe Thr Gln Pro Leu Tyr Arg Gly Glu
    850                 855                 860
Leu Asn Glu His Leu Gly Leu Leu Gly Pro Tyr Ile Arg Ala Glu Val
865                 870                 875                 880
Glu Asp Asn Ile Met Val Thr Phe Arg Asn Gln Ala Ser Arg Pro Tyr
                885                 890                 895
Ser Phe Tyr Ser Ser Leu Ile Ser Tyr Glu Glu Asp Gln Arg Gln Gly
            900                 905                 910
Ala Glu Pro Arg Lys Asn Phe Val Lys Pro Asn Glu Thr Lys Thr Tyr
        915                 920                 925
Phe Trp Lys Val Gln His His Met Ala Pro Thr Lys Asp Glu Phe Asp
    930                 935                 940
Cys Lys Ala Trp Ala Tyr Phe Ser Asp Val Asp Leu Glu Lys Asp Val
945                 950                 955                 960
His Ser Gly Leu Ile Gly Pro Leu Leu Val Cys His Thr Asn Thr Leu
                965                 970                 975
Asn Pro Ala His Gly Arg Gln Val Thr Val Gln Glu Phe Ala Leu Phe
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            980                 985                 990
Phe Thr Ile Phe Asp Glu Thr Lys Ser Trp Tyr Phe Thr Glu Asn Met
        995                 1000                1005
Glu Arg Asn Cys Arg Ala Pro Cys Asn Ile Gln Met Glu Asp Pro Thr
    1010                1015                1020
Phe Lys Glu Asn Tyr Arg Phe His Ala Ile Asn Gly Tyr Ile Met Asp
1025                1030                1035                1040
Thr Leu Lys Gly Leu Val Met Ala Gln Asp Gln Arg Ile Arg Trp Tyr
                1045                1050                1055
Leu Leu Ser Met Gly Ser Asn Glu Asn Ile His Ser Ile His Phe Ser
            1060                1065                1070
Gly His Val Phe Thr Val Arg Lys Lys Glu Glu Tyr Lys Met Ala Leu
        1075                1080                1085
Tyr Asn Leu Tyr Pro Gly Val Phe Glu Thr Val Glu Met Leu Pro Ser
    1090                1095                1100
Lys Ala Gly Ile Trp Arg Val Glu Cys Leu Ile Gly Glu His Leu His
1105                1110                1115                1120
Ala Gly Met Ser Thr Leu Phe Leu Val Tyr Ser Asn Lys Cys Gln Thr
                1125                1130                1135
Pro Leu Gly Met Ala Ser Gly His Ile Arg Asp Phe Gln Ile Thr Ala
            1140                1145                1150
Ser Gly Gln Tyr Gly Gln Trp Ala Pro Lys Leu Ala Arg Leu His Tyr
        1155                1160                1165
Ser Gly Ser Ile Asn Ala Trp Ser Thr Lys Glu Pro Phe Ser Trp Ile
    1170                1175                1180
Lys Val Asp Leu Leu Ala Pro Met Ile Ile His Gly Ile Lys Thr Gln
1185                1190                1195                1200
Gly Ala Arg Gln Asn Phe Ser Ser Leu Tyr Ile Ser Gln Phe Ile Ile
                1205                1210                1215
Met Tyr Ser Leu Asp Gly Lys Lys Trp Gln Thr Tyr Arg Gly Asn Ser
            1220                1225                1230
Thr Gly Thr Leu Met Val Phe Phe Gly Asn Val Asp Ser Ser Gly Ile
        1235                1240                1245
Lys His Asn Ile Phe Asn Pro Pro Ile Ile Ala Arg Tyr Ile Arg Leu
    1250                1255                1260
His Pro Thr His Tyr Ser Ile Arg Ser Thr Leu Arg Met Glu Leu Met
1265                1270                1275                1280
Gly Cys Asp Leu Asn Ser Cys Ser Met Pro Leu Gly Met Glu Ser Lys
                1285                1290                1295
Ala Ile Ser Asp Ala Gln Ile Thr Ala Ser Ser Tyr Phe Thr Asn Met
            1300                1305                1310
Phe Ala Thr Trp Ser Pro Ser Lys Ala Arg Leu His Leu Gln Gly Arg
        1315                1320                1325
Ser Asn Ala Trp Arg Pro Gln Val Asn Asn Pro Lys Glu Trp Leu Gln
    1330                1335                1340
Val Asp Phe Gln Lys Thr Met Lys Val Thr Gly Val Thr Thr Gln Gly
1345                1350                1355                1360
Val Lys Ser Leu Leu Thr Ser Met Tyr Val Lys Glu Phe Leu Ile Ser
                1365                1370                1375
Ser Ser Gln Asp Gly His Gln Trp Thr Leu Phe Phe Gln Asn Gly Lys
            1380                1385                1390
Val Lys Val Phe Gln Gly Asn Gln Asp Ser Phe Thr Pro Val Val Asn
        1395                1400                1405
Ser Leu Asp Pro Pro Leu Leu Thr Arg Tyr Leu Arg Ile His Pro Gln
    1410                1415                1420
Ser Trp Val His Gln Ile Ala Leu Arg Met Glu Val Leu Gly Cys Glu
1425                1430                1435                1440
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Ala Gln Asp Leu Tyr
1445

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<212> PRT
<213> Artificial Sequence

<220>
<223> synthetically generated peptide

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Cys Phe Ser Ala Thr Arg Arg Tyr Tyr Leu Gly Ala Val Glu Leu Ser
20 25 30
Trp Asp Tyr Met Gln Ser Asp Leu Gly Glu Leu Pro Val Asp Ala Arg
35 40 45
Phe Pro Pro Arg Val Pro Lys Ser Phe Pro Phe Asn Thr Ser Val Val
50 55 60
Tyr Lys Lys Thr Leu Phe Val Glu Phe Thr Asp His Leu Phe Asn Ile
65 70 75 80
Ala Lys Pro Arg Pro Pro Trp Met Gly Leu Leu Gly Pro Thr Ile Gln
85 90 95
Ala Glu Val Tyr Asp Thr Val Val Ile Thr Leu Lys Asn Met Ala Ser
100 105 110
His Pro Val Ser Leu His Ala Val Gly Val Ser Tyr Trp Lys Ala Ser
115 120 125
Glu Gly Ala Glu Tyr Asp Asp Gln Thr Ser Gln Arg Glu Lys Glu Asp
130 135 140
Asp Lys Val Phe Pro Gly Gly Ser His Thr Tyr Val Trp Gln Val Leu
145 150 155 160
Lys Glu Asn Gly Pro Met Ala Ser Asp Pro Leu Cys Leu Thr Tyr Ser
165 170 175
Tyr Leu Ser His Val Asp Leu Val Lys Asp Leu Asn Ser Gly Leu Ile
180 185 190
Gly Ala Leu Leu Val Cys Arg Glu Gly Ser Leu Ala Lys Glu Lys Thr
195 200 205
Gln Thr Leu His Lys Phe Ile Leu Leu Phe Ala Val Phe Asp Glu Gly
210 215 220
Lys Ser Trp His Ser Glu Thr Lys Asn Ser Leu Met Gln Asp Arg Asp
225 230 235 240
Ala Ala Ser Ala Arg Ala Trp Pro Lys Met His Thr Val Asn Gly Tyr
245 250 255
Val Asn Arg Ser Leu Pro Gly Leu Ile Gly Cys His Arg Lys Ser Val
260 265 270
Tyr Trp His Val Ile Gly Met Gly Thr Thr Pro Glu Val His Ser Ile
275 280 285
Phe Leu Glu Gly His Thr Phe Leu Val Arg Asn His Arg Gln Ala Ser
290 295 300
Leu Glu Ile Ser Pro Ile Thr Phe Leu Thr Ala Gln Thr Leu Leu Met
305 310 315 320
Asp Leu Gly Gln Phe Leu Leu Phe Cys His Ile Ser Ser His Gln His
325 330 335
Asp Gly Met Glu Ala Tyr Val Lys Val Asp Ser Cys Pro Glu Glu Pro
340 345 350
Gln Leu Arg Met Lys Asn Asn Glu Glu Ala Glu Asp Tyr Asp Asp Asp

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        355                 360                 365
Leu Thr Asp Ser Glu Met Asp Val Val Arg Phe Asp Asp Asp Asn Ser
    370                 375                 380
Pro Ser Phe Ile Gln Ile Arg Ser Val Ala Lys Lys Gln Gly Lys Thr
385                 390                 395                 400
Trp Val His Tyr Ile Ala Ala Glu Glu Glu Asp Trp Asp Tyr Ala Pro
                405                 410                 415
Leu Val Leu Ala Pro Asp Asp Arg Ser Tyr Lys Ser Gln Tyr Leu Asn
            420                 425                 430
Asn Gly Pro Gln Arg Ile Gly Arg Lys Tyr Lys Lys Val Arg Phe Met
        435                 440                 445
Ala Tyr Thr Asp Glu Thr Phe Lys Thr Arg Glu Ala Ile Gln His Glu
    450                 455                 460
Ser Gly Ile Leu Gly Pro Leu Leu Tyr Gly Glu Val Gly Asp Thr Leu
465                 470                 475                 480
Leu Ile Ile Phe Lys Asn Gln Ala Ser Arg Pro Tyr Asn Ile Tyr Pro
                485                 490                 495
His Gly Ile Thr Asp Val Arg Pro Leu Tyr Ser Arg Arg Leu Pro Lys
            500                 505                 510
Gly Val Lys His Leu Lys Asp Phe Pro Ile Leu Pro Gly Glu Ile Phe
        515                 520                 525
Lys Tyr Lys Trp Thr Val Thr Val Glu Asp Gly Pro Thr Lys Ser Asp
    530                 535                 540
Pro Arg Cys Leu Thr Arg Tyr Tyr Ser Ser Phe Val Asn Met Glu Arg
545                 550                 555                 560
Asp Leu Ala Ser Gly Leu Ile Gly Pro Leu Leu Ile Cys Tyr Lys Glu
                565                 570                 575
Ser Val Asp Gln Arg Gly Asn Gln Ile Met Ser Asp Lys Arg Asn Val
            580                 585                 590
Ile Leu Phe Ser Val Phe Asp Glu Asn Arg Ser Trp Tyr Leu Thr Glu
        595                 600                 605
Asn Ile Gln Arg Phe Leu Pro Asn Pro Ala Gly Val Gln Leu Glu Asp
    610                 615                 620
Pro Glu Phe Gln Ala Ser Asn Ile Met His Ser Ile Asn Gly Tyr Val
625                 630                 635                 640
Phe Asp Ser Leu Gln Leu Ser Val Cys Leu His Glu Val Ala Tyr Trp
                645                 650                 655
Tyr Ile Leu Ser Ile Gly Ala Gln Thr Asp Phe Leu Ser Val Phe Phe
            660                 665                 670
Ser Gly Tyr Thr Phe Lys His Lys Met Val Tyr Glu Asp Thr Leu Thr
        675                 680                 685
Leu Phe Pro Phe Ser Gly Glu Thr Val Phe Met Ser Met Glu Asn Pro
    690                 695                 700
Gly Leu Trp Ile Leu Gly Cys His Asn Ser Asp Phe Arg Asn Arg Gly
705                 710                 715                 720
Met Thr Ala Leu Leu Lys Val Ser Ser Cys Asp Lys Asn Thr Gly Asp
                725                 730                 735
Tyr Tyr Glu Asp Ser Tyr Glu Asp Ile Ser Ala Tyr Leu Leu Ser Lys
            740                 745                 750
Asn Asn Ala Ile Glu Pro Arg Arg Arg Arg Arg Glu Ile Thr Arg Thr
        755                 760                 765
Thr Leu Gln Ser Asp Gln Glu Glu Ile Asp Tyr Asp Asp Thr Ile Ser
    770                 775                 780
Val Glu Met Lys Lys Glu Asp Phe Asp Ile Tyr Asp Glu Asp Glu Asn
785                 790                 795                 800
Gln Ser Pro Arg Ser Phe Gln Lys Lys Thr Arg His Tyr Phe Ile Ala
                805                 810                 815
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Ala Val Glu Arg Leu Trp Asp Tyr Gly Met Ser Ser Ser Pro His Val
            820                 825                 830
Leu Arg Asn Arg Ala Gln Ser Gly Ser Val Pro Gln Phe Lys Lys Val
        835                 840                 845
Val Phe Gln Glu Phe Thr Asp Gly Ser Phe Thr Gln Pro Leu Tyr Arg
    850                 855                 860
Gly Glu Leu Asn Glu His Leu Gly Leu Leu Gly Pro Tyr Ile Arg Ala
865                 870                 875                 880
Glu Val Glu Asp Asn Ile Met Val Thr Phe Arg Asn Gln Ala Ser Arg
                885                 890                 895
Pro Tyr Ser Phe Tyr Ser Ser Leu Ile Ser Tyr Glu Glu Asp Gln Arg
            900                 905                 910
Gln Gly Ala Glu Pro Arg Lys Asn Phe Val Lys Pro Asn Glu Thr Lys
        915                 920                 925
Thr Tyr Phe Trp Lys Val Gln His His Met Ala Pro Thr Lys Asp Glu
    930                 935                 940
Phe Asp Cys Lys Ala Trp Ala Tyr Phe Ser Asp Val Asp Leu Glu Lys
945                 950                 955                 960
Asp Val His Ser Gly Leu Ile Gly Pro Leu Leu Val Cys His Thr Asn
                965                 970                 975
Thr Leu Asn Pro Ala His Gly Arg Gln Val Thr Val Gln Glu Phe Ala
            980                 985                 990
Leu Phe Phe Thr Ile Phe Asp Glu Thr Lys Ser Trp Tyr Phe Thr Glu
        995                 1000                1005
Asn Met Glu Arg Asn Cys Arg Ala Pro Cys Asn Ile Gln Met Glu Asp
    1010                1015                1020
Pro Thr Phe Lys Glu Asn Tyr Arg Phe His Ala Ile Asn Gly Tyr Ile
1025                1030                1035                1040
Met Asp Thr Leu Pro Gly Leu Val Met Ala Gln Asp Gln Arg Ile Arg
                1045                1050                1055
Trp Tyr Leu Leu Ser Met Gly Ser Asn Glu Asn Ile His Ser Ile His
            1060                1065                1070
Phe Ser Gly His Val Phe Thr Val Arg Lys Lys Glu Glu Tyr Lys Met
        1075                1080                1085
Ala Leu Tyr Asn Leu Tyr Pro Gly Val Phe Glu Thr Val Glu Met Leu
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Pro Ser Lys Ala Gly Ile Trp Arg Val Glu Cys Leu Ile Gly Glu His
1105                1110                1115                1120
Leu His Ala Gly Met Ser Thr Leu Phe Leu Val Tyr Ser Asn Lys Cys
                1125                1130                1135
Gln Thr Pro Leu Gly Met Ala Ser Gly His Ile Arg Asp Phe Gln Ile
            1140                1145                1150
Thr Ala Ser Gly Gln Tyr Gly Gln Trp Ala Pro Lys Leu Ala Arg Leu
        1155                1160                1165
His Tyr Ser Gly Ser Ile Asn Ala Trp Ser Thr Lys Glu Pro Phe Ser
    1170                1175                1180
Trp Ile Lys Val Asp Leu Leu Ala Pro Met Ile Ile His Gly Ile Lys
1185                1190                1195                1200
Thr Gln Gly Ala Arg Gln Lys Phe Ser Ser Leu Tyr Ile Ser Gln Phe
                1205                1210                1215
Ile Ile Met Tyr Ser Leu Asp Gly Lys Lys Trp Gln Thr Tyr Arg Gly
            1220                1225                1230
Asn Ser Thr Gly Thr Leu Met Val Phe Phe Gly Asn Val Asp Ser Ser
        1235                1240                1245
Gly Ile Lys His Asn Ile Phe Asn Pro Pro Ile Ile Ala Arg Tyr Ile
    1250                1255                1260
Arg Leu His Pro Thr His Tyr Ser Ile Arg Ser Thr Leu Arg Met Glu
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1265                1270                1275                1280
Leu Met Gly Cys Asp Leu Asn Ser Cys Ser Met Pro Leu Gly Met Glu
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Ser Lys Ala Ile Ser Asp Ala Gln Ile Thr Ala Ser Ser Tyr Phe Thr
            1300                1305                1310
Asn Met Phe Ala Thr Trp Ser Pro Ser Lys Ala Arg Leu His Leu Gln
        1315                1320                1325
Gly Arg Ser Asn Ala Trp Arg Pro Gln Val Asn Asn Pro Lys Glu Trp
    1330                1335                1340
Leu Gln Val Asp Phe Gln Lys Thr Met Lys Val Thr Gly Val Thr Thr
1345                1350                1355                1360
Gln Gly Val Lys Ser Leu Leu Thr Ser Met Tyr Val Lys Glu Phe Leu
                1365                1370                1375
Ile Ser Ser Ser Gln Asp Gly His Gln Trp Thr Leu Phe Phe Gln Asn
            1380                1385                1390
Gly Lys Val Lys Val Phe Gln Gly Asn Gln Asp Ser Phe Thr Pro Val
        1395                1400                1405
Val Asn Ser Leu Asp Pro Pro Leu Leu Thr Arg Tyr Leu Arg Ile His
    1410                1415                1420
Pro Gln Ser Trp Val His Gln Ile Ala Leu Arg Met Glu Val Leu Gly
1425                1430                1435                1440
Cys Glu Ala Gln Asp Leu Tyr
                1445
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<210> 5
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic construct

<221> misc_feature
<222> (7)...(16)
<223> n = a, g, c, or t

<400> 5
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<210> 6
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic construct

<221> misc_feature
<222> (7)...(16)
<223> n = a, g, c, or t

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<210> 7
<211> 118
<212> DNA

<213> Homo sapiens

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<211> 104
<212> DNA
<213> Homo sapiens

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<211> 88
<212> DNA
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gggcctgctg ggcccctaca agctttac 88

<210> 10
<211> 119
<212> DNA
<213> Homo sapiens

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<210> 11
<211> 107
<212> DNA
<213> Homo sapiens

<400> 11
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tctgcatgta gtcccagctc agctccacgg cgcccaggta gtagcgg 107

<210> 12
<211> 84
<212> DNA
<213> Homo sapiens

<400> 12
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tgcatgctag cctacgaatt ctac 84

<210> 13
<211> 115
<212> DNA
<213> Homo sapiens

<400> 13

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<210> 14
<211> 103
<212> DNA
<213> Homo sapiens

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caaggtgttc cccggcggca gccacaccta cgtgtggcag gtg 103

<210> 15
<211> 79
<212> DNA
<213> Homo sapiens

<400> 15
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cacgtgctac aagctttac 79

<210> 16
<211> 107
<212> DNA
<213> Homo sapiens

<400> 16
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<210> 17
<211> 101
<212> DNA
<213> Homo sapiens

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<210> 18
<211> 89
<212> DNA
<213> Homo sapiens

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<210> 19
<211> 122
<212> DNA
<213> Homo sapiens

<400> 19
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<210> 20
<211> 110
<212> DNA
<213> Homo sapiens

<400> 20
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<210> 21
<211> 86
<212> DNA
<213> Homo sapiens

<400> 21
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gtactggcac gtgctacaag ctttac 86

<210> 22
<211> 108
<212> DNA
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<400> 22
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<212> DNA
<213> Homo sapiens

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<212> DNA
<213> Homo sapiens

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ttcaggtcct tcaccaggtc cacgtggcta cgaattctac 100

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<211> 99
<212> DNA
<213> Homo sapiens

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ggagggccac accttcctgg tgcgcaacca ccgccaggc 99

<210> 26
<211> 100

<212> DNA
<213> Homo sapiens

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ccagttcctg ctgttctgcc acatcagcag ccaccagcac 100

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<211> 101
<212> DNA
<213> Homo sapiens

<400> 27
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<211> 84
<212> DNA
<213> Homo sapiens

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ctctacggat cctacaagct ttac 84

<210> 29
<211> 109
<212> DNA
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<212> DNA
<213> Homo sapiens

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aggcctccat gccgtcgtgc tggtggctgc tgatgtggca g 101

<210> 31
<211> 102
<212> DNA
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<400> 31
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ctgatctcca ggctggcctg gcggtggttg cgcaccagga ag 102

<210> 32
<211> 72
<212> DNA
<213> Homo sapiens

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tacgaattct ac 72

<210> 33
<211> 122
<212> DNA
<213> Homo sapiens

<400> 33
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atcgccgccg aggaggagga ctgggactac gccccccctgg tgctggcccc cgacgaccgc 120
ag 122

<210> 34
<211> 120
<212> DNA
<213> Homo sapiens

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gcgcttcatg gcctacaccg acgagacctt caagacccgc gaggccatcc agcacgagag 120

<210> 35
<211> 115
<212> DNA
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<400> 35
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gaaccaggcc agccgccccct acaacatcta cccccacggc atcaccgacg tgcgc 115

<210> 36
<211> 86
<212> DNA
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cccggcgaga tctctacaag ctttac 86

<210> 37
<211> 109
<212> DNA
<213> Homo sapiens

<400> 37
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ttgggcaggc ggcggctgta caggggcgc acgtcggtga tgccgtggg 109

<210> 38
<211> 114
<212> DNA
<213> Homo sapiens

<400> 38
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cctcgccgta cagcaggggg cccaggatgc cgctctcgtg ctggatggcc tcgc 114

<210> 39
<211> 121
<212> DNA
<213> Homo sapiens

<400> 39
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c 121

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<211> 99
<212> DNA
<213> Homo sapiens

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gtgcttcttg gccacgctgc ggatccctac gaattctac 99

<210> 41
<211> 102
<212> DNA
<213> Homo sapiens

<400> 41
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aagagcgacc cccgctgcct gacccgctac tacagcagct tc 102

<210> 42
<211> 103
<212> DNA
<213> Homo sapiens

<400> 42
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gagagcgtgg accagcgcgg caaccagatc atgagcgaca agc 103

<210> 43
<211> 61
<212> DNA
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c 61

<210> 44
<211> 87
<212> DNA
<213> Homo sapiens

<400> 44
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cgcttgtcgc tcatgatctg gttgccg 87

<210> 45
<211> 101
<212> DNA
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<400> 45
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<211> 78
<212> DNA
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<212> DNA
<213> Homo sapiens

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<211> 126
<212> DNA
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agcatcggcg cccagaccga cttcctgagc gtgttcttca gcggctacac cttcaagcac 120
aagatg 126

<210> 49
<211> 95
<212> DNA
<213> Homo sapiens

<400> 49
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gagaaccccg gcctgtggat ccctacaagc tttac 95

<210> 50
<211> 119
<212> DNA
<213> Homo sapiens

<400> 50
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ctgaagggga acagggtcag ggtgtcctcg tacaccatct tgtgcttgaa ggtgtagcc 119

<210> 51
<211> 124

<212> DNA
<213> Homo sapiens

<400> 51
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catg 124

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<211> 98
<212> DNA
<213> Homo sapiens

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cgctggatgt tctcggtcag gtaccctacg aattctac 98

<210> 53
<211> 111
<212> DNA
<213> Homo sapiens

<400> 53
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<210> 54
<211> 102
<212> DNA
<213> Homo sapiens

<400> 54
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<211> 105
<212> DNA
<213> Homo sapiens

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gacgaggacg agaaccagag cccccgcagc ttccagaaga agacc 105

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<211> 79
<212> DNA
<213> Homo sapiens

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cacgtgctac aagctttac 79

<210> 57
<211> 101
<212> DNA
<213> Homo sapiens

<400> 57
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<211> 105
<212> DNA
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atggtgtcgt cgtagtcgat ctcctcctgg tcgctctgca gggtg 105

<210> 59
<211> 108
<212> DNA
<213> Homo sapiens

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<211> 83
<212> DNA
<213> Homo sapiens

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cccaggatcc ctacgaattc tac 83

<210> 61
<211> 115
<212> DNA
<213> Homo sapiens

<400> 61
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gaaggtggtg ttccaggagt tcaccgacgg cagcttcacc cagcccctgt accgc 115

<210> 62
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<212> DNA
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<400> 62
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<210> 63
<211> 106
<212> DNA
<213> Homo sapiens

<400> 63
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atccagatgg aggaccccac cttcaaggag aactaccgct tccacg 106

<210> 64
<211> 85
<212> DNA
<213> Homo sapiens

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tccgctggta ccctacaagc tttac 85

<210> 65
<211> 115
<212> DNA
<213> Homo sapiens

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<210> 66
<211> 99
<212> DNA
<213> Homo sapiens

<400> 66
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accagctctt ggtctcgtcg aagatggtga agaacaggg 99

<210> 67
<211> 110
<212> DNA
<213> Homo sapiens

<400> 67
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<212> DNA
<213> Homo sapiens

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gcgcggttgc gcagcacgtg ctacgaattc tac 93

<210> 69
<211> 116
<212> DNA
<213> Homo sapiens

<400> 69
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<210> 70

<211> 120
<212> DNA
<213> Homo sapiens

<400> 70
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aaggacgagt tcgactgcaa ggcctgggcc tacttcagcg acgtggacct ggagaaggac 120

<210> 71
<211> 91
<212> DNA
<213> Homo sapiens

<400> 71
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cacggccgcc aggtgaccct acaagcttta c 91

<210> 72
<211> 113
<212> DNA
<213> Homo sapiens

<400> 72
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ccagcagggg gccgatcagg ccgctgtgca cgtccttctc caggtccacg tcg 113

<210> 73
<211> 121
<212> DNA
<213> Homo sapiens

<400> 73
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accttccaga agtaggtctt ggtctcgttg ggcttcacga agttcttgcg gggctcggcg 120
c 121

<210> 74
<211> 93
<212> DNA
<213> Homo sapiens

<400> 74
cctggcgctg gtcctcctcg tagctgatca ggctgctgta gaagctgtag gggcggctgg 60
cctggttgcg gaaggtcacc ctacgaattc tac 93

<210> 75
<211> 120
<212> DNA
<213> Homo sapiens

<400> 75
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ttcagcggcc acgtgttcac cgtgcgcaag aaggaggagt acaagatggc cctgtacaac 120

<210> 76
<211> 122
<212> DNA

<213> Homo sapiens

<400> 76
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gtggagtgcc tgatcggcga gcacctgcac gccggcatga gcaccctgtt cctggtgtac 120
ag 122

<210> 77
<211> 102
<212> DNA
<213> Homo sapiens

<400> 77
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cgccagcggc cagtacggcc agtgggcccc tacaagcttt ac 102

<210> 78
<211> 123
<212> DNA
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<400> 78
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gtg 123

<210> 79
<211> 125
<212> DNA
<213> Homo sapiens

<400> 79
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ctgggcagca tctccacggt ctcgaacacg ccggggtaca ggttgtacag ggccatcttg 120
tactc 125

<210> 80
<211> 96
<212> DNA
<213> Homo sapiens

<400> 80
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gctgcccatg ctcagcaggt accctacgaa ttctac 96

<210> 81
<211> 120
<212> DNA
<213> Homo sapiens

<400> 81
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tggagcacca aggagccctt cagctggatc aaggtggacc tgctggcccc catgatcatc 120

<210> 82
<211> 116
<212> DNA

<213> Homo sapiens

<400> 82
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atcatcatgt acagcctgga cggcaagaag tggcagacct accgcggcaa cagcac 116

<210> 83
<211> 86
<212> DNA
<213> Homo sapiens

<400> 83
cggcaccctg atggtgttct tcggcaacgt ggacagcagc ggcatcaagc acaacatctt 60
caacccccc gggctacaag ctttac 86

<210> 84
<211> 110
<212> DNA
<213> Homo sapiens

<400> 84
gtaaagcttg tagcccgggg gggttgaaga tgttgtgctt gatgccgctg ctgtccacgt 60
tgccgaagaa caccatcagg gtgccggtgc tgttgccgcg gtaggtctgc 110

<210> 85
<211> 113
<212> DNA
<213> Homo sapiens

<400> 85
cacttcttgc cgtccaggct gtacatgatg atgaactggc tgatgtacag gctgctgaac 60
ttctggcggg cgccctgggt cttgatgccg tggatgatca tgggggccag cag 113

<210> 86
<211> 99
<212> DNA
<213> Homo sapiens

<400> 86
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gtgcaggcgg gccagcttgg gggcccctac gaattctac 99

<210> 87
<211> 122
<212> DNA
<213> Homo sapiens

<400> 87
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ccgcagcacc ctgcgcatgg agctgatggg ctgcgacctg aacagctgca gcatgccccc 120
gg 122

<210> 88
<211> 112
<212> DNA
<213> Homo sapiens

<400> 88
gcatggagag caaggccatc agcgacgccc agatcaccgc cagcagctac ttcaccaaca 60
tgttcgccac ctggagcccc agcaaggccc gcctgcacct gcagggccgc ag 112

<210> 89
<211> 89
<212> DNA
<213> Homo sapiens

<400> 89
caacgcctgg cgcccccagg tgaacaaccc caaggagtgg ctgcaggtgg acttccagaa 60
gaccatgaag gtgaccctac aagctttac 89

<210> 90
<211> 112
<212> DNA
<213> Homo sapiens

<400> 90
gtaaagcttg tagggtcacc ttcatggtct tctggaagtc cacctgcagc cactccttgg 60
ggttgttcac ctgggggcgc caggcgttgc tgcggccctg caggtgcagg cg 112

<210> 91
<211> 114
<212> DNA
<213> Homo sapiens

<400> 91
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ggcgtcgctg atggccttgc tctccatgcc caggggcatg ctgcagctgt tcag 114

<210> 92
<211> 97
<212> DNA
<213> Homo sapiens

<400> 92
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gcggatgtag cgggcgatga tatcctacga attctac 97

<210> 93
<211> 122
<212> DNA
<213> Homo sapiens

<400> 93
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tgtacgtgaa ggagttcctg atcagcagca gccaggacgg ccaccagtgg accctgttct 120
tc 122

<210> 94
<211> 104
<212> DNA
<213> Homo sapiens

<400> 94
cagaacggca aggtgaaggt gttccagggc aaccaggaca gcttcacccc cgtggtgaac 60

agcctggacc ccccccctgct gacccgctac ctgcgcatcc accc 104

<210> 95
<211> 92
<212> DNA
<213> Homo sapiens

<400> 95
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cctgtactag ctgcccgggc tacaagcttt ac 92

<210> 96
<211> 118
<212> DNA
<213> Homo sapiens

<400> 96
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tgcgcagggc gatctggtgc acccagctct gggggtggat gcgcaggtag cgggtcag 118

<210> 97
<211> 100
<212> DNA
<213> Homo sapiens

<400> 97
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cttcaccttg ccgttctgga agaacagggt ccactggtgg 100

<210> 98
<211> 100
<212> DNA
<213> Homo sapiens

<400> 98
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acgccctggg tggtcacgcc ggtcacccta cgaattctac 100

<210> 99
<211> 140
<212> DNA
<213> Homo sapiens

<400> 99
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<210> 100
<211> 57
<212> DNA
<213> Homo sapiens

<400> 100
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<210> 101

<211> 58
<212> DNA
<213> Homo sapiens

<400> 101
ctgcagagcg accaggagga gatcgactac gacgacacca tcagcgtgga agctttac 58

<210> 102
<211> 79
<212> DNA
<213> Homo sapiens

<400> 102
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tggtgcgggt gatctcgcg 79

<210> 103
<211> 57
<212> DNA
<213> Homo sapiens

<400> 103
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<210> 104
<211> 119
<212> DNA
<213> Homo sapiens

<400> 104
ctcgtagctg tcctcgtagt agtcgccggt gttcttgtcg cagctgctca ccttcagcag 60
ggcggtcatg ccgcggttgc ggaagtcgct gttgtggcag cccaggatcc gaattctac 119

<210> 105
<211> 310
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 105
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gcgcttctgc ttcagcgcca cccgccgcta ctacctgggc gccgtggagc tgagctggga 120
ctacatgcag agcgacctgg gcgagctgcc cgtggacgcc cgcttccccc cccgcgtgcc 180
caagagcttc cccttcaaca ccagcgtggt gtacaagaag accctgttcg tggagttcac 240
cgaccacctg ttcaacatcg ccaagccccg ccccccctgg atgggcctgc tgggccccta 300
caagctttac 310

<210> 106
<211> 297
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 106
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tgaagaacat ggccagccac cccgtgagcc tgcacgccgt gggcgtgagc tactggaagg 120
ccagcgaggg cgccgagtac gacgaccaga ccagccagcg cgagaaggag gacgacaagg 180
tgttccccgg cggcagccac acctacgtgt ggcaggtgct gaaggagaac ggccccatgg 240
ccagcgaccc cctgtgcctg acctacagct acctgagcca cgtgctacaa gctttac 297

<210> 107
<211> 318
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 107
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tgctggtgtg ccgcgagggc agcctggcca aggagaagac ccagaccctg cacaagttca 120
tcctgctgtt cgccgtgttc gacgagggca agagctggca cagcgagacc aagaacagcc 180
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gctacgtgaa ccgcagcctg cccggcctga tcggctgcca ccgcaagagc gtgtactggc 300
acgtgctaca agctttac 318

<210> 108
<211> 384
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 108
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caccttcctg accgcccaga ccctgctgat ggacctgggc cagttcctgc tgttctgcca 180
catcagcagc caccagcacg acggcatgga ggcctacgtg aaggtggaca gctgccccga 240
ggagccccag ctgcgcatga agaacaacga ggaggccgag gactacgacg acgacctgac 300
cgacagcgag atggacgtgg tgcgcttcga cgacgacaac agccccagct tcatccagat 360
ctctacggat cctacaagct ttac 384

<210> 109
<211> 443
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 109
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atcgccgccg aggaggagga ctgggactac gccccccctgg tgctggcccc cgacgaccgc 120
agctacaaga gccagtacct gaacaacggc ccccagcgca tcggccgcaa gtacaagaag 180
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ctgtacagcc gccgcctgcc caagggcgtg aagcacctga aggacttccc catcctgccc 420
ggcgagatct ctacaagctt tac 443

<210> 110
<211> 266
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 110
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cgcttgtcgc tcatgatctg gttgccgcgc tggtccacgc tctccttgta gcagatcagc 120
aggggccga tcaggccgct ggccaggtcg cgctccatgt tcacgaagct gctgtagtag 180
cgggtcaggc agcgggggtc gctcttggtg gggccgtcct ccacggtcac ggtccacttg 240
tacttgaaga tctctacgaa ttctac 266

<210> 111
<211> 341
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 111
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gtgcagctgg aggaccccga gttccaggcc agcaacatca tgcacagcat caacggctac 120
gtgttcgaca gcctgcagct gagcgtgtgc ctgcacgagg tggcctactg gtacatcctg 180
agcatcggcg cccagaccga cttcctgagc gtgttcttca gcggctacac cttcaagcac 240
aagatggtgt acgaggacac cctgaccctg ttccccttca gcggcgagac cgtgttcatg 300
agcatggaga accccggcct gtggatccct acaagcttta c 341

<210> 112
<211> 397
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 112
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gccctgctga aggtgagcag ctgcgacaag aacaccggcg actactacga ggacagctac 120
gaggacatca gcgcctacct gctgagcaag aacaacgcca tcgagccccg cctggaggag 180
atcacccgca ccaccctgca gagcgaccag gaggagatcg actacgacga caccatcagc 240
gtggagatga agaaggagga cttcgacatc tacgacgagg acgagaacca gagcccccgc 300
agcttccaga agaagacccg ccactacttc atcgccgccg tggagcgcct gtgggactac 360
ggcatgagca gcagccccca cgtgctacaa gctttac 397

<210> 113
<211> 417
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 113
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gaaggtggtg ttccaggagt tcaccgacgg cagcttcacc cagcccctgt accgcggcga 120
gctgaacgag cacctgggcc tgctgggccc ctacatccgc gccgaggtgg aggacaacat 180
catggtgacc gtgcaggagt tcgccctgtt cttcaccatc ttcgacgaga ccaagagctg 240
gtacttcacc gagaacatgg agcgcaactg ccgcgccccc tgcaacatcc agatggagga 300
ccccaccttc aaggagaact accgcttcca cgccatcaac ggctacatca tggacaccct 360
gcccggcctg gtgatggccc aggaccagcg catccgctgg taccctacaa gctttac 417

<210> 114
<211> 327
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 114
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gcctgatcag ctacgaggag gaccagcgcc agggcgccga gccccgcaag aacttcgtga 120
agcccaacga gaccaagacc tacttctgga aggtgcagca ccacatggcc cccaccaagg 180
acgagttcga ctgcaaggcc tgggcctact tcagcgacgt ggacctggag aaggacgtgc 240
acagcggcct gatcggcccc ctgctggtgt gccacaccaa caccctgaac cccgcccacg 300
gccgccaggt gaccctacaa gctttac 327

<210> 115
<211> 344
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 115
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ttcagcggcc acgtgttcac cgtgcgcaag aaggaggagt acaagatggc cctgtacaac 120
ctgtaccccg gcgtgttcga gaccgtggag atgctgccca gcaaggccgg catctggcgc 180
gtggagtgcc tgatcggcga gcacctgcac gccggcatga gcaccctgtt cctggtgtac 240
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accgccagcg gccagtacgg ccagtgggcc cctacaagct ttac 344

<210> 116
<211> 322
<212> DNA
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<220>
<223> synthetically generated construct

<400> 116
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cacggcatca agacccaggg cgcccgccag aagttcagca gcctgtacat cagccagttc 180
atcatcatgt acagcctgga cggcaagaag tggcagacct accgcggcaa cagcaccggc 240
accctgatgg tgttcttcgg caacgtggac agcagcggca tcaagcacaa catcttcaac 300
ccccccgggc tacaagcttt ac 322

<210> 117
<211> 323
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<220>
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<400> 117
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catgttcgcc acctggagcc ccagcaaggc ccgcctgcac ctgcagggcc gcagcaacgc 240
ctggcgcccc caggtgaaca accccaagga gtggctgcag gtggacttcc agaagaccat 300
gaaggtgacc ctacaagctt tac 323

<210> 118
<211> 318
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 118
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tgtacgtgaa ggagttcctg atcagcagca gccaggacgg ccaccagtgg accctgttct 120
tccagaacgg caaggtgaag gtgttccagg gcaaccagga cagcttcacc cccgtggtga 180
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accagatcgc cctgcgcatg gaggtgctgg gctgcgaggc ccaggacctg tactagctgc 300
ccgggctaca agctttac 318

<210> 119
<211> 310
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 119
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caggtggtcg gtgaactcca cgaacagggt cttcttgtac accacgctgg tgttgaaggg 120
gaagctcttg ggcacgcggg gggggaagcg ggcgtccacg ggcagctcgc ccaggtcgct 180
ctgcatgtag tcccagctca gctccacggc gcccaggtag tagcggcggg tggcgctgaa 240
gcagaagcgc agcaggcaca ggaagaagca ggtgctcagc tcgatctgca tgctagccta 300
cgaattctac 310

<210> 120
<211> 297
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 120

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tggggccgtt ctccttcagc acctgccaca cgtaggtgtg gctgccgccg gggaacacct 120
tgtcgtcctc cttctcgcgc tggctggtct ggtcgtcgta ctcggcgccc tcgctggcct 180
tccagtagct cacgcccacg gcgtgcaggc tcacggggtg gctggccatg ttcttcaggg 240
tgatcaccac ggtgtcgtac acctcggcct ggatggtggg gcccctacga attctac 297

<210> 121
<211> 318
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 121
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ggctgcggtt cacgtagccg ttcacggtgt gcatcttggg ccaggcgcgg gcgctggcgg 120
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acacggcgaa cagcaggatg aacttgtgca gggtctgggt cttctccttg gccaggctgc 240
cctcgcggca caccagcagg gcgccgatca ggccgctgtt caggtccttc accaggtcca 300
cgtggctacg aattctac 318

<210> 122
<211> 384
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 122
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cgcaccacgt ccatctcgct gtcggtcagg tcgtcgtcgt agtcctcggc ctcctcgttg 120
ttcttcatgc gcagctgggg ctcctcgggg cagctgtcca ccttcacgta ggcctccatg 180
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agggtctggg cggtcaggaa ggtgatgggg ctgatctcca ggctggcctg gcggtggttg 300
cgcaccagga aggtgtggcc ctccaggaag atgctgtgca cctcgggggt ggtgcccatg 360
ccgatcacgt gctacgaatt ctac 384

<210> 123
<211> 443
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 123
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tcggtgtagg ccatgaagcg caccttcttg tacttgcggc cgatgcgctg ggggccgttg 300
ttcaggtact ggctcttgta gctgcggtcg tcgggggcca gcaccagggg ggcgtagtcc 360
cagtcctcct cctcggcggc gatgtagtgc acccaggtct tggggtgctt cttggccacg 420
ctgcggatcc ctacgaattc tac 443

<210> 124
<211> 266
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 124
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aagagcgacc cccgctgcct gacccgctac tacagcagct tcgtgaacat ggagcgcgac 120
ctggccagcg gcctgatcgg ccccctgctg atctgctaca aggagagcgt ggaccagcgc 180
ggcaaccaga tcatgagcga caagcgcaac gtgatcctgt tcagcgtgtt cgacgagaac 240
cgcagctggt accctacaag ctttac 266

<210> 125
<211> 341
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 125
gtaaagcttg tagggatcca caggccgggg ttctccatgc tcatgaacac ggtctcgccg 60
ctgaagggga acagggtcag ggtgtcctcg tacaccatct tgtgcttgaa ggtgtagccg 120
ctgaagaaca cgctcaggaa gtcggtctgg gcgccgatgc tcaggatgta ccagtaggcc 180
acctcgtgca ggcacacgct cagctgcagg ctgtcgaaca cgtagccgtt gatgctgtgc 240
atgatgttgc tggcctggaa ctcggggtcc tccagctgca cgccggcggg gttgggcagg 300
aagcgctgga tgttctcggt caggtaccct acgaattcta c 341

<210> 126
<211> 397
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 126
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cgtcgtagat gtcgaagtcc tccttcttca tctccacgct gatggtgtcg tcgtagtcga 180
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cgttgttctt gctcagcagg taggcgctga tgtcctcgta gctgtcctcg tagtagtcgc 300
cggtgttctt gtcgcagctg ctcaccttca gcagggcggt catgccgcgg ttgcggaagt 360
cgctgttgtg gcagcccagg atccctacga attctac 397

<210> 127
<211> 417
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 127

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gtgtccatga tgtagccgtt gatggcgtgg aagcggtagt tctccttgaa ggtggggtcc 120
tccatctgga tgttgcaggg ggcgcggcag ttgcgctcca tgttctcggt gaagtaccag 180
ctcttggtct cgtcgaagat ggtgaagaac agggcgaact cctgcacggt caccatgatg 240
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ccgcggtaca ggggctgggt gaagctgccg tcggtgaact cctggaacac caccttcttg 360
aactggggca cgctgccgct ctgggcgcgg ttgcgcagca cgtgctacga attctac 417

<210> 128
<211> 327
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 128
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ccagcagggg gccgatcagg ccgctgtgca cgtccttctc caggtccacg tcgctgaagt 120
aggcccaggc cttgcagtcg aactcgtcct tggtgggggc catgtggtgc tgcaccttcc 180
agaagtaggt cttggtctcg ttgggcttca cgaagttctt gcggggctcg gcgccctggc 240
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tgcggaaggt caccctacga attctac 327

<210> 129
<211> 344
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 129
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gtgctcatgc cggcgtgcag gtgctcgccg atcaggcact ccacgcgcca gatgccggcc 180
ttgctgggca gcatctccac ggtctcgaac acgccggggt acaggttgta cagggccatc 240
ttgtactcct ccttcttgcg cacggtgaac acgtggccgc tgaagtggat gctgtggatg 300
ttctcgttgc tgcccatgct cagcaggtac cctacgaatt ctac 344

<210> 130
<211> 322
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

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cgtccaggct gtacatgatg atgaactggc tgatgtacag gctgctgaac ttctggcggg 180
cgccctgggt cttgatgccg tggatgatca tgggggccag caggtccacc ttgatccagc 240
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tgggggcccc tacgaattct ac 322

<210> 131

<211> 323
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 131
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tggggctcca ggtggcgaac atgttggtga agtagctgct ggcggtgatc tgggcgtcgc 180
tgatggcctt gctctccatg cccaggggca tgctgcagct gttcaggtcg cagcccatca 240
gctccatgcg cagggtgctg cggatgctgt agtgggtggg gtgcaggcgg atgtagcggg 300
cgatgatatc ctacgaattc tac 323

<210> 132
<211> 318
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 132
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ggggggggtc caggctgttc accacggggg tgaagctgtc ctggttgccc tggaacacct 180
tcaccttgcc gttctggaag aacagggtcc actggtggcc gtcctggctg ctgctgatca 240
ggaactcctt cacgtacatg ctggtcagca ggctcttcac gccctgggtg gtcacgccgg 300
tcaccctacg aattctac 318

<210> 133
<211> 255
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 133
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tgctgaaggt gagcagctgc gacaagaaca ccggcgacta ctacgaggac agctacgagg 120
acatcagcgc ctacctgctg agcaagaaca acgccatcga gccccgcagg cgcaggcgcg 180
agatcacccg caccaccctg cagagcgacc aggaggagat cgactacgac gacaccatca 240
gcgtggaagc tttac 255

<210> 134
<211> 255
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetically generated construct

<400> 134
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tggtgcgggt gatctcgcgc ctgcgcctgc ggggctcgat ggcgttgttc ttgctcagca 120

ggtaggcgct gatgtcctcg tagctgtcct cgtagtagtc gccggtgttc ttgtcgcagc 180
tgctcacctt cagcagggcg gtcatgccgc ggttgcggaa gtcgctgttg tggcagccca 240
ggatccgaat tctac 255

<210> 135
<211> 4
<212> PRT
<213> Homo sapiens

<400> 135
Arg Arg Arg Arg
1

<210> 136
<211> 5
<212> PRT
<213> Homo sapiens

<400> 136
Arg Arg Arg Arg Arg
1 5